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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,682	07/30/2007	Ulrich Issberner	C 2906 PCT/US	2782
23657 7590 07/17/2008 COGNIS CORPORATION PATENT DEPARTMENT 300 BROOKSIDE AVENUE AMBLER, PA 19002			EXAMINER CUTLIFF, YATE KAI RENE	
			ART UNIT 1621	PAPER NUMBER
			MAIL DATE 07/17/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/599,682

**Applicant(s)**

ISSBERNER ET AL.

**Examiner**

YATE' K. CUTLIFF

**Art Unit**

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 10/9/2007
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 6 is objected to because of the following informalities: In line 9, "and" is missing. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Breusch, F. L., et al. (Chem. Ber., 1955).
4. The rejected claim covers, a fatty acid ester of pentaerythritol, a pentaerythritol oligomer, or mixtures thereof, wherein the fatty acid has 6 to 22 carbon atoms, and wherein the ester contains less than 0.3% by weight C17 fatty acid acyl groups and has a melting point of at least 30°C.
5. Breusch et al. discloses C6-C22 fatty acid esters of pentaerythritol and their melting points. (pages 1518 - 1519, Table). The table does not disclose the concentration of C17 fatty acid acyl groups in the list of esters. However, during patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664,

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1667 (Fed. Cir. 2000). Claim terms are presumed to have the ordinary and customary meanings attributed to them by those of ordinary skill in the art. *Sunracer Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1302, 67 USPQ2d 1438, 1441 (Fed. Cir. 2003); *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1298 67 USPQ2d 1132, 1136 (Fed. Cir. 2003). The phrase "contains less than" as applied to C17 fatty acid acyl groups has been interpreted to denote "0 up to 0.3%" C17 fatty acid acyl groups. As such, since the claimed fatty acid ester of pentaerythritol can be free of C17 fatty acid acyl groups the claim is anticipated by the reference.

6. Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakurai et al. (US 4,113,635).

7. The rejected claims cover, inter alia, fatty acids esters of pentaerythritol with various weight percentages of monoesters, diesters, triesters and tetraesters, in its composition.

8. Sakurai et al. discloses lubricant mixtures of pentaerythritol fatty acid esters produced from vegetable and animal oil, and straight chain fatty acids having C6 to C18 fatty acids. (see column 3, lines 40-47). Example 3 discloses pentaerythritol esters that are 20% monoester, 30% diester, 40% triester and 10% tetraester. Example 6 discloses an ester mixture that is 30% monoester, 35% diester and 35% triester. The ranges in Examples 3 and 6 overlap Applicant's claimed ranges for the monoester, diester, triester and tetraester.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai et al. (US 4,113,635) in view of Knothe et al. (American Chemical Society 1997).

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13. The rejected claims cover, inter alia, fatty acids esters of pentaerythritol where the fatty acid present is from about 40 to 50% C16 fatty acid and from about 45 to 55% C18 fatty acid.

14. Sakurai et al. discloses lubricant mixtures of pentaerythritol fatty acid esters produced from vegetable and animal oil, and straight chain fatty acids having C6 to C18 fatty acids. (see column 3, lines 40-47).

Sakurai et al. fails to disclose that pentaerythritol fatty acid ester mixtures have 40 to 50% C16 and 45 to 55% C18 fatty acid. Sakurai et al. does disclose in column 5, Table I No H a pentaerythritol ester of beef tallow fatty acid.

However, this difference appears to be well within the purview of an ordinary artisan because, Knothe et al. which provides an analysis of a variety of natural oils and their fatty acid composition, discloses in Table II on page 179 that the fatty acid composition of beef tallow is generally 25 to 37% C16 fatty acid and about 14 to 52% C18 fatty acid.

For the reasons set forth above in paragraph 13, it would have been obvious to one of ordinary skill in the art of fatty acids esters, at the time the claimed invention was made to have a fatty acid ester of pentaerythritol mixture of C16 and C18 as suggested by Sakurai et al. in view Knothe et al. as disclosed the motivation is in Knothe et al. since beef tallow has fatty acid content in the range that overlaps with the claimed range and any fatty acid ester made from beef tallow would have a similar if not identical fatty acid content.

Therefore, the invention as a whole was *prima facie* obvious because a person of ordinary skill in the art at the time the invention was made, would have been motivated to combine the prior art to achieve the claimed invention and that there would have been a reasonable expectation of success.

15. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miranol Chemical Company (EP 0163 806) (Miranol) in view of Knothe et al. (American Chemical Society 1997).

16. The rejected claims cover, inter alia, a process for production of a C16/C18 fatty acid ester of pentaerythritol, comprising (A) providing about 1.8 to about 2.2 mol of a fatty acid mixture per mol of pentaerythritol wherein the fatty acid mixture comprises from about 40% to about 50% by weight of a C16 fatty acid and from about 45% to about 55% by weight of a C18 fatty acid; (B) esterifying component (A) at temperatures ranging from about 180°C to about 250°C in an inert gas atmosphere in the absence of solvent to form a reaction mixture; and (C) stirring the reaction mixture *in vacuo* until it has an acid value of less than 1 and an OH value of 145 to 158. The dependent claims disclose standard esterification process steps, the addition of hydrogen peroxide to the reaction mixture, and the fatty acid mixture material.

17. Miranol discloses a process for preparing esters of pentaerythritol using mixtures of palmitic (C16) and stearic (C18) acid, where 0.5 to 2.5 moles of the fatty acid per mole of pentaerythritol are used, with the reaction temperature being 150 to 200°C and can be carried out in the absence of a solvent. (see page 4, lines 13-23 & 29-31, Example 1, & Example 7).

Miranol fails to disclose the following: the OH value of 145 to 158; water removal by distillation; removal of unreacted pentaerythritol by filtration; treating the reaction mixture with hydrogen peroxide; and the fatty acid mixture is derived from vegetable material.

However, with regard to the OH value and the addition of hydrogen peroxide, Miranol uses methanolic sodium methoxide to neutralize the acid catalyst in its reaction mixture. It would have been in the purview of the skilled artisan to neutralize the reaction mixture by reducing the acid level with a hydrogen peroxide since it can be converted to OH radicals in the reaction. Further, with regard to the use of distillation and filtration both appear to be drawn up to the work up of the final product since Miranol discloses that water is removed and the methanol is removed. The claimed steps appear to be well within the purview of one having ordinary skill in the art. These steps are especially obvious in an industrial type process. Thus, dependent claims 7-9 are drawn to routine tweaking steps which a skilled artisan would be motivated to do in order to make the process more efficient.

With regard to the use of a fatty acid mixture derived from vegetable material. According to Applicant's claim 6 the vegetable material would have to be a mixture of C16 fatty acid and C18 fatty acid and within the claimed ranges. Knothe teaches that palm oil naturally consists of fatty acids of C16 and C18 within the weight ranges of Applicant's claimed weight ranges.

The main process steps of Applicant's claimed invention, esterification of C16 and C18 mixture of fatty acids with pentaerythritol is disclosed in Miranol. Knothe



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teaches that the natural state of palm oil contains a fatty acid mixture with overlapping weight percentages. Additionally, the other refining process steps used by Applicant are routine to an esterification process. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to prepare a C16/C18 fatty acid pentaerythritol ester as suggested by Miranol in view of Knothe.

Therefore, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, 82 USPQ2d 1385 (U.S. 2007).

18. Claims 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plough, Inc. (EP 0 179 416) in view of Miranol (EP 0 163 806)

19. The rejected claims cover, inter alia, a cosmetic and/or pharmaceutical composition comprising an ester formed by esterification of pentaerythritol, a pentaerythritol oligomer, or mixtures thereof with C6-22 fatty acids, wherein the ester contains less than 0.3% by weight C17 fatty acid acyl groups and has a melting point of at least 30°C.

20. Plough discloses a cosmetic and cosmetic base composition which contains 2 to 25 weight percent of pentaerythritol tetra C20 - C24 aliphatic hydrocarbon carboxylates. (see page 2, last paragraph). The composition includes wax components, oil, surfactants, oligoglycosides and water. (see page 3, line 13 to end & Example I – III).

Plough fails to disclose the weight percentage of the C17 fatty acid acyl group, however, Plough discloses that the cosmetic does not have C17 fatty acid acyl group. As previously stated, Applicant's claim is interpreted to mean that the weight percentage of C17 is "0 to 0.3%", therefore, the reference encompasses the claimed composition.

Additionally, Plough fails to disclose the following: monoesters, diesters and triesters of pentaerythritol. However, since the pentaerythritol has four hydroxy groups, and the ester used in the cosmetic is formed by esterification of the pentaerythritol, it is well within the purview of the skilled artisan to expect that the product produced by the process of would have a mixture of mono, di and tri esters.

Plough fails to disclose that the cosmetic composition has the fatty acid present in a mixture. However, Miranol discloses a cosmetic product in Example 8 which contains a mixture of pentaerythritol oligomers. Additionally, the mixtures in Miranol can be mixtures of palmitic and stearic acids. (see page 4, lines 13 -18).

In view of the references set out above, it would have been obvious to one of ordinary skill in the art of cosmetics to use pentaerythritol esters, a pentaerythritol oligomer or mixtures thereof to improve upon the sensory advantages of cosmetic products such as shown in Plough with a broader range of fatty acid esters of pentaerythritol as shown in Miranol, in order to gain the commonly understood benefits of such an improvement, such as improved consistency, appearance and cushion.

Therefore, the claimed cosmetic composition would have been obvious because the market forces provided reason to make an adaptation, and the invention resulted from application of the prior knowledge in a predictable manner.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YATE' K. CUTLIFF whose telephone number is (571)272-9067. The examiner can normally be reached on M-TH 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on (571) 272 - 0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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